

2012-2013 Graduate Biochemistry course

COURSE DIRECTORS:

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Course Description and Credits:

BCO 520 (fall quarter) and **BCO522** (winter quarter), **three quarter hours per course:** This course is comprised of a series of lectures on topics in biochemistry, offered through the Biochemistry Department. Classes for this course will be **1.5 hours long starting at 3:15 PM** and will meet on **Mondays, Wednesdays and Fridays**.

BCO 521 (fall quarter) and **523** (winter quarter), **two quarter hours per course:** This supplement course offered through the Biochemistry Department in conjunction with the above mentioned lecture course, will provide students with the opportunity to explore the topics covered in the lecture series in greater depth. At the discretion of the lecturers, activities including problem-solving sessions and discussions of papers from the primary literature will be assigned. The BCO521 and BCO523 courses run concurrently with the lecture courses, BCO520 and BCO522 respectively. Classes for this course will be **2 hours long starting at 3:15 PM** and will meet generally on **Mondays, Wednesdays and Fridays** with few exceptions (see attached schedule).

OBJECTIVES:

The objective of the lecture course (BCO520/522) is to enable the graduate students to gain an understanding of the basic concepts of biochemistry which is essential for their research career in any area of biology. These graduate level courses assume a background in chemistry and biology.

The supplemental course (BCO521/523) is designed to bridge the gap between learning the concepts from the text book and using that knowledge in research. Some of the topics covered in the lecture course will be discussed at a greater detail so that the students will get a better understanding of the concepts and will also have an opportunity to get familiarized with the experimental strategies/approaches of biochemistry used in biomedical research.

TEXTS:

The required text is: **Biochemistry, 7th Edition – Jeremy M. Berg, John L. Tymoczko, and Lubert Stryer; W. H. Freeman and Company, New York.** The required **Student Companion** for the text book is by **Gumpert, RI, Deis, FH, Gerber NC and Koeppe-II, RE.**

Instructors may also make reading assignments from the primary literature.

EXAMS:

BCO520/522- Student performance will be evaluated based on two section examinations to be administered in class according to the attached schedule. Each exam will be for **2 hours**.

BCO521/523 – Student performance will be based on a single Take-home Exam. Near the end of each quarter, the exam will be distributed and will be due about a week after that.

Each exam will be for a total of **100 points**. In the exam, the number of points the topics covered by each instructor will be worth will be the same as the percentage of the total number of classes in that block taught by that instructor.

Example: If the block that is tested has 8 classes with instructors A, B and C teaching 2, 1 and 5 classes respectively, the exam will have questions worth 25, 12.5 and 62.5 points respectively from A, B and C (totaling up to 100).

Important note to students: Students are reminded that *in all the graduate biochemistry course exams they are expected to fully comply with the rules and regulations pertaining to plagiarism outlined in pages 15, 33 and 34 of the USU SOM Graduate Student Hand book*. It is a policy of the Biochemistry Department that students practicing any act of Plagiarism (as defined in the student hand book) will be subjected to punitive actions that may include giving an 'F' grade for the entire course, referring the case to the Graduate Education committee (GEC) etc.

SCHEDULE OF CLASSES

Legend for the class schedule:

Classes for lecture course (BCO520 and BCO522)
Classes for supplement course (BCO521 and BCO523)
Exams
Holidays

Fall quarter		
BCO520 (Lecture course) and BCO521 (Supplement course)		
Chapter 1: Biochemistry: An Evolving Science		
Chapter 2: Protein Composition and Structure		
Chapter 3: Exploring Proteins and Proteomes		
Aug 20	Dr. Grahame	Lec Room B
Aug 22		Lec Room B
Aug 24		Lec Room B
Aug 27		Lec Room B
Chapter 4: DNA, RNA and the Flow of Genetic Information		
Chapter 5: Exploring Genes and Genomes		
Aug 29	Dr. Cox	Lec Room B
Chapter 6: Exploring Evolution and Bioinformatics		
Aug 31	Dr. Sundaresan	Lec Room B
Sep 3	Labor Day	
Chapter 7: Hemoglobin: Portrait of a Protein in Action		
Sep 5	Dr. Xiang	Lec Room B
Sep 7		Lec Room B
Chapter 8: Enzymes: Basic Concepts and Kinetics		
Chapter 9: Catalytic Strategies		
Sep 10	Dr. Maynard	Lec Room A
Sep 12		Lec Room B
Sep 14		Lec Room B
Sep 17		Lec Room B
Sep 19		Lec Room B
Sep 21		Lec Room B
Chapter 10: Regulatory Strategies		
Sep 24	Dr. Xiang	Lec Room B
Sep 26		Lec Room B
Sep 28	BCO520 Mid-term exam (Chapters 1-9) Lec Room B	
Chapter 12: Lipids and Cell membranes		
Chapter 13: Membrane Channels and Pumps		
Oct 1	Dr. Dey	Lec Room B
Oct 3		Lec Room B
Oct 5		Lec Room B
Oct 8	Columbus Day	

Oct 10	Dr. Dey	Lec Room B
Oct 12		Lec Room B
Oct 15		Lec Room B
Chapter 11: Carbohydrates		
Oct 17	Dr. Roseman	Lec Room B
Oct 19		Lec Room B
Chapter 14: Signal-Transduction Pathways		
Oct 22	Dr. Cox	Lec Room B
Oct 24		Lec Room B
Chapter 15: Metabolism: Basic Concepts and Design		
Chapter 16: Glycolysis and Gluconeogenesis		
Oct 26	Dr. Roseman	Lec Room B
Oct 29		Lec Room B
Oct 31		Lec Room B
Nov 2		Lec Room B
Nov 5	BCO520 final exam (Chapters 10 to 16) Lec Room B Pick up BCO521 take home exam (Chapters 1 to 16)	
Winter quarter BCO522 (Lecture course) and BCO523 (Supplement course)		
Chapter 17: The Citric Acid Cycle		
Chapter 20: The Pentose Phosphate Pathway		
Nov 7	Dr. Wang	Lec Room B
Nov 9		Lec Room B
Nov 12	Veterans' Day	
Chapter 18: Oxidative Phosphorylation		
Nov 14	Dr. Grahame	Lec Room B
Chapter 21: Glycogen Metabolism		
Chapter 22: Fatty Acid Metabolism		
Nov 16	Dr. Roseman	Lec Room B
Nov 19		Lec Room B
Nov 21		Lec Room B
Nov 22 to Nov 25	Thanksgiving Recess	
Chapter 23: Protein Turnover and Amino Acid Catabolism		
Chapter 24: Biosynthesis of Aminoacids		
Nov 26	Dr. Roseman	Lec Room B
Nov 28		Lec Room B
Nov 30		Lec Room B
Dec 3	Dr. Roseman	Lec Room A
Dec 5	Dr. Cole	Lec Room B
Chapter 25: Nucleotide Biosynthesis		
Dec 7	Dr. Grahame	Lec Room A
Dec 10		Lec Room B
Dec 12		Lec Room B
Dec 14	No Class	
Dec 17	BCO522 Mid-term exam (Chapters 17, 18 and 20-25) Lec Room B	
Dec 19 and 21	No Class	
Dec 22 to Jan 2	Winter Recess	
Chapter 26: Biosynthesis of Membrane Lipids and Steroids		
Jan 4	Dr. Petukhova	Lec Room B
Jan 7	Dr. Petukhova	Lec Room B
Jan 9		Lec Room B
Chapter 27: Integration of Metabolism		

Jan 11	Dr. Roseman	Lec Room B
Jan 14		Lec Room B
Jan 16		Lec Room B
Chapter 28: DNA Replication, Repair and Recombination		
Jan 18	Dr. Sundaesan	Lec Room B
Jan 21	M.L.K. Birthday	
Jan 23	Dr. Sundaesan	Lec Room B
Jan 25		Lec Room B
Chapter 29: RNA Synthesis and Processing		
Chapter 30: Protein Synthesis		
Jan 28	Dr. Horowitz	Lec Room B
Jan 30		Lec Room B
Feb 1		Lec Room B
Feb 4		Lec Room B
Feb 6		Lec Room B
Feb 8		Lec Room B
Chapter 31: The Control of Gene Expression in Prokaryotes		
Chapter 32: The Control of Gene Expression in Eukaryotes		
Feb 11	Dr. Koutmos	Lec Room B
Feb 13		Lec Room B
Feb 15		Lec Room B
Feb 18	President's Day	
Feb 20	BCO522 final exam (Chapters 26 to 32) Lec Room B Pick up BCO523 take home exam (Chapters 17, 18 and 20-32)	

Number of points the questions from each instructor will be worth in each of the exams:

Instructor	Number of points the questions of the instructor are worth in each exam					
	BCO520		BCO521	BCO522		BCO523
	Exam-I	Exam-II		Exam-I	Exam-II	
Dr. Cole						10
Dr. Cox	9	10	12			
Dr. Dey		40	22			
Dr. Grahame	27		11	30		10
Dr. Horowitz					32	20
Dr. Koutmos					17	10
Dr. Maynard	37		22			
Dr. Petukhova					17	10
Dr. Roseman		50	11	60	17	20
Dr. Sundaesan	9				17	10
Dr. Wang				10		10
Dr. Xiang	18		22			
Total	100	100	100	100	100	100